

Amendments to Claims

This listing of the claims will replace all prior versions, and listing, of claims in the application:

Listing of claims

1.(currently amended) A method of stabilizing porous silicon (PSi) to protect the porous silicon from luminescence fatigue comprising the steps of:

preparing a porous silicon structure having a surface terminated with hydrogen atoms; and

subjecting said porous silicon structure to ~~organic thermal processing~~non-catalytic thermally induced hydrosilation with reactants selected from the group consisting of: $RCH=X$, $R^1R^2C=X$, where $X=O, NR', S$) and RNu , where $Nu = OH, NHR', SH, COOH$, to substitute said hydrogen atoms with a protective organic layer, and wherein the reactants are purified to free them of peroxide and hydroperoxide impurities prior to said ~~thermal processing~~hydrosilation and the length of the carbon chains in the reactants is greater than or equal to 8.

2.(original) A method as claimed in claim 1, wherein said reactants are aldehydes.

3.(original) A method as claimed in claim 1, wherein said organic thermal processing is carried out in the absence of an external catalyst.

4.(original) A method as claimed in claim 1, wherein said protective organic layer has a thickness is equal to or less than the length of the molecules of said reactants.

5.(original) A method as claimed in claim 4, wherein said protective organic monolayer comprises bonds selected from the group consisting of: Si-C and Si-O-C.

6.(original) A method as claimed in claim 1, wherein said organic thermal processing comprises reacting said porous silicon structure with reactants selected from the group consisting of: octyl and decyl aldehydes.

7.(original) A method as claimed in claim 6, wherein said organic thermal processing takes place at a temperature of between 50°C and 250°C.

8.(original) A method as claimed in claim 7, wherein said organic thermal processing at a temperature of between 85°C and 115°C .

- 9.(original) A method as claimed in claim 8, wherein said porous silicon structure is reacted with an aldehyde at about 85°C.
- 10.(original) A method as claimed in claim 1, wherein said reactants are purified prior at said thermal processing step by distillation.
- 11.(original) A method as claimed in claim 10, wherein prior to thermal processing the silicon structure is rinsed with an organic solvent and then dried.
- 12.(original) A method as claimed in claim 11, wherein said organic solvent is ethanol.
- 13.(original) A method as claimed in claim 11, wherein said silicon structure is dried by exposure to an inert gas flow.
- 14.(original) A method as claimed in claim 13, wherein said inert gas is selected from the group consisting of argon and nitrogen.
- 15.(original) A method as claimed in claim 1, wherein the reactants are deoxygenated prior to thermal processing.
- 16.(original) A method as claimed in claim 1, wherein a small amount of oxidation is permitted to occur during said thermal processing.
- 17.(original) A method as claimed in claim 16, wherein said porous silicon structure is thermally reacted with ethyl undecylenate to produce a surface bearing an ester function at the end of an Si layer.
- 18.(original) A method as claimed in claim 17, wherein said thermal processing takes place at 85°C.
- 19.(currently amended) A method of making a stabilized porous silicon (PSi) structure to protect the porous silicon structure from luminescence fatigue, comprising:
treating a silicon wafer in an aqueous acid solution to remove native oxide and produce a hydrogen-terminated surface;
electrochemically etching said hydrogen terminated surface to provide a porous silicon film;
providing an aldehyde or thioaldehyde reactant capable of producing a protective organic layer on said structure;
purifying said reactant to remove peroxide and hyperoxide impurities; and

subjecting said porous silicon film to non-catalytic thermally induced hydrosilation ~~organic thermal processing~~ with said reactant to substitute said hydrogen atoms in said hydrogen-terminated surface with a protective organic layer.

20.(original) A method as claimed in claim 19 wherein said reactant is purified by distillation.

21.(original) A method as claimed in claim 19, wherein said organic thermal processing takes place in the absence of an external catalyst.

22.(original) A method as claimed in claim 19, wherein said porous silicon film is subjected to organic thermal processing at a temperature between 85 and 115°C.

23.(original) A method as claimed in claim 19, wherein said protective organic layer is an organic monolayer of a thickness substantially equally to the length of molecules in said organic protective layer.

24.(original) A method as claimed in claim 23, wherein said organic monolayer comprises Si-C and Si-O-C bonds.

25.(original) A method as claimed in claim 19, wherein said porous silicon film is reacted with compounds selected from the group consisting of: octyl and decyl aldehydes.

Claims 26 to 33 are canceled.